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ABSTRACT

Seven current elementary science programs were compared on the basis of curriculum and instructional characteristics and practicality. The Science Curriculum Improvement Study (SCIS) was found to rank highest. (CP)

ASSESSMENT OF EXISTING ELEMENTARY SCIENCE PROGRAMS

by

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In order to compare the science programs available, it was necessary to develop a list of criteria. These criteria are incorporated into the following table and are separated into those used to evaluate the curriculum aspects of a program, those used to evaluate the instructional aspects of a program, and those used to evaluate the practical aspects one would look at in evaluating a program. All existing science programs have not been evaluated. In selecting programs for evaluation we used these criteria: 1) programs should be of fairly recent vintage (revised or new within the past five years) 2) at least one program should be representative of the textbook approach 3) the programs should be widely recognized and most likely to be adopted by a school looking for a science program today. According to these criteria the following programs have been reviewed and subsequently evaluated: 1) Experiences in Science (EIS) by Tannenbaum-Stillman, 2) Science - A Process Approach (AAAS) 3) Elementary Science Study (ESS), 4) Concepts in Science by Brandwein, 5) Elementary Science Project (ESP) by Novak, 6) Science Curriculum Improvement Study (SCIS) by Karplus, and 7) D. C. Heath Elementary Science Series by Schneider.

Each program was rated according to the criteria listed and evaluated by means of the following rating scale:

0 = no attempt
1 = partial attempt
2 = definite attempt
3 = definite attempt and achievement

TABLE 1

AN ANALYSIS OF SEVEN ELEMENTARY SCIENCE PROGRAMS

CRITERIA USED TO EVALUATE A SCIENCE PROGRAM	EIS	AAAS	ESS	CONCEPTS	ESP	SCIS	HEATH
CURRICULUM							
1. A total K-6 program is available.	3	3	*	3	1	3	3
2. The goals of the program are behaviorally stated.	0	3	0	0	0	2	0
3. The structure of the subject matter is conceptually organized.	1	0	0	3	3	3	1
4. Concepts and processes are integrated and form some sort of hierarchy.	2	0	0	1	1	1	0
5. Concepts are organized around constructs which provide possibilities for going beyond the subject matter of science (e.g. interaction, systems, variables) as opposed to organization around conceptual schemes (e.g. living things are in constant change)	0	0	0	0	0	3	0
6. Content from physical and biological sciences are introduced at all levels.	3	3	0	3	0	3	0
7. Content is sequenced developmentally and geared to intellectual development of children.	2	2	1	1	2	3	1
8. Content incorporates natural environmental phenomena.	3	3	2	2	2	3	3
9. Content is geared to real-life experiences of children.	2	2	2	2	2	2	2
10. Content incorporates the latent thinking within the discipline of science.	3	3	2	3	3	3	3
INSTRUCTION							
11. Laboratory-oriented inductive approach is used rather than a text-oriented approach.	1	3	3	1	1	3	1
12. Activities are consistent with stated goals.	2	3	3	2	1	3	1
13. Activities at each level are designed for the intellectual developmental stage of the children at that level.	2	2	2	2	2	3	2
14. Concepts are presented so that children are continually confronted with alternative solutions to problems. (There is no single correct answer to a question.)	2	2	3	1	2	3	1
15. Activities are the kind which provide fun and motivation and in which children can become involved.	3	3	3	1	1	3	1
16. Role of the teacher is guide and fellow investigator rather than dispenser of knowledge.	2	3	3	2	0	3	0
PRACTICAL ASPECTS							
17. Program is being used in schools.	3	3	3	3	3	3	3
18. Program is being used nationwide.	3	3	3	3	0	3	3
19. Developmental effort included national field-trial.	0	3	3	0	0	3	1
20. Feedback from field-trial was used in revision of program.	3	3	3	0	0	3	0
21. Problems of materials production are essentially solved.	3	3	3	2	0	3	2
22. Problems of implementation have been thought of and provided for in some manner.	2	3	2	2	0	3	2
23. Program does not require large capital outlay for equipment other than kits.	3	3	3	3	1	3	3
24. People behind the program are flexible, easy to get along with, practical, realistic, knowledgeable in the area of curriculum development.	3	3	0	0	0	3	0
25. People behind the program are amenable to individualization.	3	3	3	1	3	3	0

*Not applicable

The total ratings and totals for each aspect evaluated (curriculum instruction, and practical aspects) for each program reviewed may be found in Table II. According to this table the programs may be arranged in the following order from program with the highest total score to that with the lowest total score:

1. SCIS
2. AAAS
3. EIS
4. ESS
5. CONCEPTS IN SCIENCE
6. HEATH
7. ESP

TABLE II

ACCUMULATION OF RATING SCORES FROM TABLE I

	EIS	AAAS	ESS	CONCEPTS IN SCIENCE	ESP	SCIS	HEATH
Curriculum Aspects	19	19	7	18	14	26	16
Instructional Aspects	12	16	17	9	7	18	6
Practical Aspects	23	27	23	14	7	27	14
TOTALS	54	62	47	41	28	71	36

The outstanding characteristic which places SCIS at the top of the list can be found in the curriculum category analyzed in Table I. In almost every aspect SCIS receives the highest score. The way in which the SCIS program is organized - the science concepts developed, the sequencing of these concepts

and the possible scope of the science covered are the reasons for this. In addition an organization which revolves around constructs provides for flexibility and possibilities which are not evident in any other program analyzed.